

WHAT IS CLAIMED IS :

1. A machine for packaging stacks of multiply articles of paper or the like, into wrappings obtained by wrapping sheets, the machine including:

a first line for conveying and separating stacks of multiply articles of paper;

a working station for wrapping stacks of multiply articles of paper;

a second line for feeding stepwise heat-weldable wrapping sheets to the working station, each sheet being placed and kept vertically in a waiting position in the working station;

a third line (3) including an upstream section fed stepwise with stacks by the first line, and passing crosswise through the working station, the third line moving at least one stack towards the sheet, so that the sheet gradually folds around the stack or stacks longitudinal contour while overlapping parallel edges of the sheet are heat-welded;

said second line further including:

first means and second means designed for receiving a wrapping sheet from conveying means situated upstream, for pulling said sheet to said working station, for clamping said sheet in said working station in at least one upper area;

keeping means cooperating with said first means to allow said sheet to pass through said working station and to be stabilized while dwelling therein.

2. A machine, according to claim 1, wherein said second means cooperate with said first means to clamp said sheet in said working station in at least a lower area and an upper area.

3. A machine, according to claim 1, wherein:

said first means include at least one pair of first strip-like endless belts having inner runs cooperating with said keeping means, said first strip-like endless belts being mounted around relative wheels and spaced apart to engage, when operated synchronously, corresponding edges of a surface of said sheet, said first belts forming a straight section passing through at least said station;

said second means include at least one pair of second strip-like endless belts mounted around wheels and spaced apart to engage, when operated synchronously and with the same speed as said first strip-like endless belts, corresponding edges of another surface of said sheet facing said second strip-like endless belts, said second strip-like endless belts defining a straight section situated in the upper part of said working station.

4. A machine, according to claim 3, further including at least one pair of wheels around which said second strip-like endless belts is mounted, said one pair of wheels being situated in said working station and adjustable vertically to adjust the height of a window through which said stack passes.

5. A machine, according to claim 1, wherein:

said first means include at least one pair of first strip-like endless belts having inner runs cooperating with said keeping means, said first strip-like endless belts being mounted around relative wheels and spaced apart to engage, when operated synchronously, corresponding edges of a surface of said sheet, said first belts forming a straight section passing through at least said station;

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said second means include an upper section and a lower section respectively, with the upper section being comprised of at least one pair of second strip-like endless belts mounted around wheels, said second strip-like endless belts being spaced apart to engage, when operated synchronously and with a same speed as said first strip-like endless belts, corresponding edges of another surface of said sheet facing said second strip-like endless belts, said second strip-like endless belts defining a straight section situated in the upper part of said working station, while said lower section includes at least one pair of third strip-like endless belts, mounted around wheels and operated synchronously and with the same speed as said first strip-like endless belts to engage the same edges of the sheet surface which are engaged by said second strip-like endless belts, said third strip-like endless belts facing the lower part of said straight section of the first strip-like endless belts and being spaced apart from said second strip-like endless belts to define a window, through which said stack passes.

6. A machine, according to claim 5, further including at least one pair of wheels around which said second strip-like endless belts is mounted, said one pair of wheels being situated in said working station and adjustable vertically to adjust the height of a window through which said stack passes.

7. A machine, according to claim 5, wherein the pair of said third strip-like endless belts are operated, in time relation with hitting of the stack against the sheet in waiting position in said working station, to move from a working position to a displaced position displaced with respect to the first strip-like endless belts, to allow the lower portion of the sheet, introduced between said first strip-like endless belts and third strip-like endless belts, to be released.

8. A machine, according to claim 7, wherein said third pair of belts is mounted with a possibility to swing so as to move close to, or far from, the pair of first strip-like endless belts.

9. A machine, according to claim 7, wherein said inner runs of the third strip-like endless belts are connected with vacuum means, operated in time relation with their movement far from the first strip-like endless belts, to rub, in combination with the downward movement of the inner runs, the lower portion of a sheet introduced between said first strip-like endless belts and third strip-like endless belts, against the inner runs.

10. A machine, according to claim 7, wherein the inner runs of said third strip-like endless belts move downwards in time relation with the movement of said third strip-like endless belts far from the first strip-like endless belts.

11. A machine, according to claim 3, wherein said keeping means extend downwards, so as to keep the maximum possible size of the sheet adherent to the inner run of the first strip-like endless belts.

12. A machine, according to claim 1, wherein said keeping means include suction means.

13. A machine, according to claim 1, further including:

pressing means situated upstream of the working station for receiving and pressing at least one stack of articles to be packaged;

pusher means for transferring longitudinally said stack, so that it hits a wrapping sheet previously positioned vertically in said working station;

conveying means situated downstream of said working station, with a stack partially wrapped within the wrapping sheet being introduced into said conveying means;

said pressing means for receiving and pressing said stack to be packaged and said pusher means for longitudinal transfer of the stack, being carried by a slide moving longitudinally between a backward position with respect to the positioning plane of the wrapping sheet, in which said stack is received and pressed, and a forward position, in which said compressing means for receiving and compressing the stack, hit and stretch said wrapping sheet, so as to move close to said conveying means to transfer said stack to said conveying means.

14. A machine according to claim 13, wherein said pressing means for receiving and pressing said stack, include a base plate fastened to said slide, said stack being fed onto said base plate, and a cover pressing plate moving vertically.

15. A machine, according to claim 14, wherein said base plate and said pressing plate feature a fore edge, turned toward said wrapping sheet and formed with tapered corners.

16. A machine, according to claim 13, wherein said conveying means face, on a side turned toward said wrapping sheet, a pair of shaped profiles for facilitating introduction of a stack between opposite runs of said conveying means.

17. A machine, according to claim 16, further including folding-welding means for folding and welding overlapped edges

of said wrapping sheet partially wrapping a stack introduced between opposite runs of said conveying means, with said folding-welding means acting substantially at a position flush with said shaped profiles.

18. A machine, according to claim 6, further including folding means situated downstream of said shaped profiles and designed to fold the sheet along flaps turned upstream of the front heads of the stack.

19. A machine, according to claim 1, wherein said first means and second means follows in cascade a slow run defined by two facing runs operated with constant speed, with a sheet of film drawn from a reel and acted on by a cutting group being inserted between said two facing runs, said cutting group operating stepwise to make crosswise cutting lines defining as many pre-breaking sections;

said first and second means being operated with different speeds, so that a leading edge of the film can be introduced between said first and second means to break the pre-breaking section of the film situated in the slow run, in order to detach a sheet, obtained by this breaking, from the leading edge of the film, which is situated between the facing runs of the slow run, so as to locate said sheet in the working station, to feed the lower portion of said sheet to said working station, due to hitting of a stack against the sheet.

20. A machine, according to claim 1, wherein said first line includes square pulling elements having bases and wing elements, with said bases hinged to an outer ring extending vertically, said bases being also connected to an inner ring extending vertically, and with said wing elements always kept in vertical position, whereas each base is connected to said

inner ring in a removable way, so as to allow said base to be disengaged from the inner ring, if stresses acting on said wing overcome a predetermined value.

21. A machine, according to claim 20, wherein said pulling elements of said first line are operated with a speed variable with respect to a predetermined medium value, and the instant speed is reduced with respect to said medium value when a stack of articles coming from the connected feeding channels is introduced into the first line.